

OCT 20 1897

U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR SEPTEMBER, 1897.

KENTUCKY SECTION

OF THE

CLIMATE AND CROP SERVICE

OF THE

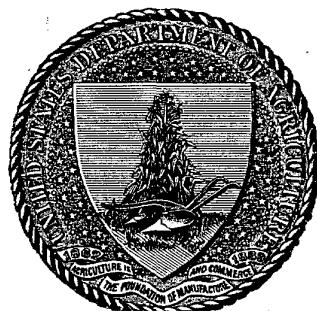
WEATHER BUREAU.

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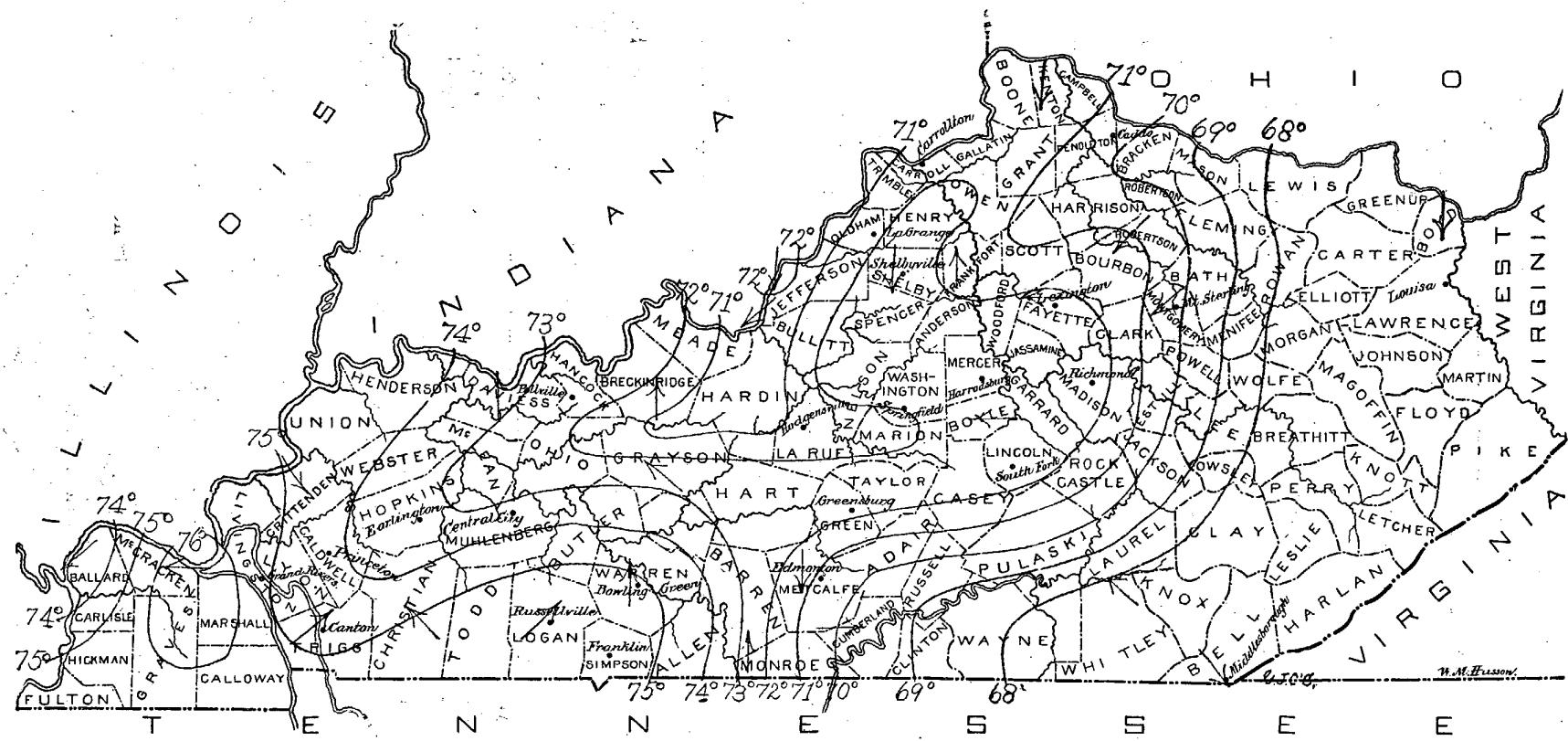
UNDER DIRECTION OF
WILLIS L. MOORE
CHIEF OF WEATHER BUREAU

BY

FRANK BURKE,
LOCAL FORECAST OFFICIAL AND SECTION DIRECTOR,
LOUISVILLE, KY.



MEAN MONTHLY ISOTHERMS AND WIND DIRECTION, SEPTEMBER, 1897.



Arrows fly with the wind.

U. S. DEPARTMENT OF AGRICULTURE,
CLIMATE AND CROP SERVICE
 OF THE
WEATHER BUREAU.

Central Office, }
 WASHINGTON, D. C. }

{ **WILLIS L. MOORE,**
 Chief.

KENTUCKY SECTION,
 FRANK BURKE, Section Director,
 LOUISVILLE, KY.

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LOUISVILLE, KY.

No. 9.

REPORT FOR KENTUCKY SECTION, SEPTEMBER, 1897.

Weather and Crops.

September's record of weather and its effects upon crops is an interesting one, both from a scientific and a commercial point of view. Its scientific phases are found in the wide departure of temperature and precipitation from normal climatic conditions. The serious losses, occasioned by extremes of heat and dryness and sustained by the farmers, materially affected the commercial resources of the State. A record of these facts enhances the value of the weekly and monthly reports of the Kentucky Section of the climate and crop service of the Weather Bureau, U. S. Department of Agriculture.

The temperature of any section or State is the primal factor in determining its climate, but its effects upon crop conditions this month, however damaging, were of secondary importance to those wrought by the almost total absence of rain. September was the fourth month of the crop-growing season during which drouth had prevailed in the Western Section, where the average rainfall for the month was only .08 inch. This small amount resulted from light showers which were quite general throughout the State on the 16th, though there are many stations and probably whole counties where absolutely no rain fell at all. In the Central and Eastern Sections the respective averages were .26 and .43, and for the State at large .21, or 2.73 inches less than the normal. This is the lowest average precipitation for any month since the organization of the State service in 1889. There have been several months in the past twenty-six years when the actual amount at the Central Station was less than .21, but it is doubtful if there ever was a time when so small an average occurred throughout the State.

While this extraordinary deficiency in precipitation was

accumulating, the temperature went to the opposite extreme, the month closing with an average daily excess of more than 5°. Beginning about September 5 the thermometer rose above 90° in most parts of the State, the excessive heat becoming more intense every day. By the 11th a stagnant and over-heated atmosphere settled over the State and continued until the 16th inclusive. During these six days the highest temperature ever known in Kentucky in September was recorded. At a number of stations in the Western and Central Sections the thermometer rose to 100°, the highest reported being 105° at Greensburg and Shelby City.

A change to cooler set in on the 17th. By the morning of the 21st the thermometer had fallen to 31° at several stations, thereby making the month's range of 74° in five days' time. Killing frosts occurred throughout the State generally on the 21st and 22d, and light frosts on the 23d. Ice formed at Pleasure Ridge Park and at several other stations on the 21st, when the mean temperature was 10° below the normal; but by the 26th it had risen again to an average daily excess of 14°. Thus the month closed with another heat wave prevailing over the State. As a rule the nights were cool throughout the month, which accounts for the unusually large average daily range of 30°. A range of more than 50° occurred at a number of stations in the southern portion of the State on the 24th.

Prior to September 1 the distribution of rainfall over the eastern half of the State was quite uniform and normal, and consequently crops in this section were in far better condition than those of the Western Section, where drouth began in June and spread in every direction during the succeeding months. Early corn was almost an average crop in the former section, and scarcely half the usual yield in the latter section. But from the effects of excessive heat and drouth, which blighted the crops in all sections during September, these prospects were reduced so as to make the season's yield in the entire State very much less than an average crop. Early corn matured rapidly during the first half of the month, especially in the eastern portion. The late crop was cut short in all sections, and was still further damaged by frost on the 21st and 22d.

The tobacco prospect also diminished as the close of the season approached. It had been a very poor crop from the beginning, but the continuance of hot and dry weather caused it to yellow at the bottom and burn rapidly. In order to save it from total ruin growers had to cut most of it prematurely. This work was prosecuted vigorously during the extraordinarily hot spell from the 11th to the 16th inclusive. As a result not more than one-fifth of the crop was exposed to the frost on the 21st. Most tobacco in low lands was totally ruined. That on the uplands sustained only slight damage from these frosts. Yet it was variously estimated

that most of this outstanding tobacco was seriously damaged. On August 31 the tobacco prospect was favorable for little more than half a crop, but at the close of the season this had been reduced very materially by the frosts above referred to.

The situation over the State throughout the month was distressing. Most of the rivers were very low or totally dry. Springs were exhausted, and the supply of water both for man and beast was lower than ever known before, and commanded a very high price in certain localities. A water famine seemed imminent at the close of the month.

Plowing for winter wheat was suspended everywhere, owing to the dry and dusty condition of the soil. Farmers who had broken ground in August were obliged to await the coming of rainfall and replow and resow their fields. Irish potatoes were not more than half a crop. Turnips failed to sprout in many localities and were a poor crop generally.

METEOROLOGICAL DATA, SEPTEMBER, 1897.

Temperature, (Deg. Fahr.)

Average daily maximum, 89.3; average daily minimum, 56.4; monthly mean, 72.8, which was 3.4 above the normal; highest reported, 105 at Greensburg on the 14th and at Shelby City on the 15th; lowest, 31 at Loretto and Pleasure Ridge Park on the 21st; monthly range for State, 74; greatest monthly range, 73 at Shelby City; greatest local daily range, 57 at Greensburg on the 24th; average daily range throughout the month, 30. The average for the Western Section was six degrees higher than that of the Eastern, as may be seen from the respective figures: Western, 74.7; Central, 72.8; Eastern, 68.8.

Except on the 2d and 3d instants the thermometer rose above 90° every day up to the 16th inclusive in both the Western and Central Sections, and almost every day in the Eastern Section. The greatest heat was attained from the 11th to the 16th, during which period the thermometer reached and exceeded 100°. During the first half of the month the daily excess in temperature averaged 10°. A change to cooler set in on the 17th and continued until the 23d. On the morning of the 21st the mercury fell to below the freezing point of 32°. Another warm spell began on the 24th and continued during the remainder of the month.

Precipitation, (Inches.)

The average precipitation for the State was only .21, or 2.73 less than the normal. The averages for the various sections were as follows: Western, .08; Central, .26; Eastern, .43. No rain occurred at Paducah and Shelby City, and the majority of stations in the western and southern counties reported only a trace. The greatest amount reported was 1.20 at Scott. Most of the rainfall reported resulted from the storm which passed through the Ohio Valley on the 16th and 17th.

Weather.

The number of cloudy days reported from all stations will not give an average of one day for the entire month. Bright sunshiny days prevailed in all parts of the State. The average number of clear days was 26; partly cloudy, 4; cloudy, 0, and of days with .01 of an inch of precipitation, 1.

Miscellaneous Phenomena, (Dates.)

Frost, Light—Bowling Green, 21, 23; Cairo, 21; Hopkinsville, 21, 22; Owensboro, 21, 23; Princeton, 22, 23; Alpha, 23; Cincinnati, 21; Edmonton, 21, 23; Frankfort, 21, 22; Greensburg, 23; Leitchfield, 21, 22; Lexington, 21, 22; Louisville, 22; Lyndon, 21, 22; Marrowbone, 21, 23; Mount Herman, 21, 22; Richmond, 21; Saint John, 21, 22, 23; Scott, 28, 29; Shelbyville, 21, 23; Carlisle, 18; Catlettsburg, 23; Middlesboro, 24, 30; Southfork, 22, 23; Vanceburg, 21, 22.

Frost, Killing—Blandville, 21, 22; Bowling Green, 22; Canton, 21, 22; Ensor, 21, 22; Owensboro, 22; Russellville, 21, 22; Alpha, 21, 22; Cincinnati, 22, 29; Edmonton, 22; Greensburg, 21, 22; Irvington, 21, 22; Louisville, 21; Marrowbone, 22; Owenton, 21, 22; Richmond, 22; Scott, 21, 22; Shelby City, 21, 22; Shelbyville, 22; Carlisle, 21, 22; Catlettsburg, 21, 22; Middlesboro, 21, 22, 23; Mount Sterling, 21, 22; Southfork, 21.

Thunderstorms—Bowling Green, 14; Ensor, 16; Caddo, 16; Edmonton, 13, 14, 15; Loretto, 15; Louisville, 1, 16; Marrowbone, 14, 15, 16; Pleasure Ridge Park, 2, 16, 17; Scott, 1, 6; Middlesboro, 2, 16.

Lunar Halo—Loretto, 7, 13, 21; Shelby City, 29.

Dense Fog—Fords Ferry, 18, 22; Pleasure Ridge Park, 3.

Table of Comparison for September.

Year.	Temperature	Departure	Precipitation	Year.	Temperature	Departure	Precipitation	Departure	
1889.....	72.1	+ 2.7	1.23	-1.71	1894.....	71.7	+ 2.3	2.71	-0.23
1890.....	67.0	+ 2.4	2.71	-0.23	1895.....	73.4	+ 4.0	1.10	-1.84
1891.....	69.5	+ 0.1	1.89	-1.05	1896.....	68.6	+ 0.8	3.77	+0.83
1892.....	68.5	+ 0.9	2.68	-0.26	1897.....	72.8	+ 3.4	0.21	-2.73
1893.....	69.6	+ 0.2	3.24	+ 0.30					

Atmospheric Pressure and Wind.

Mean barometer, 30.150. Prevailing direction, *Southeast*.

Stations.	Barometer.			Wind Velocity.			Date
	Mean	Highest	Lowest	Average hourly	Maximum	Direction	
Cairo, Ill.....	30.13	30.36	29.96	5.3	45	N W	24
Cincinnati, Ohio.....	30.17	30.40	29.95	4.5	36	N W	.....
Knoxville, Tenn.....	30.16	30.40	29.96	5.4	35	S W	16
Nashville, Tenn.....	30.14	30.37	29.96	5.0	31	N E	16
Lexington.....	30.14	30.35	29.95	7.0	24	S W	25
Louisville.....	30.16	30.39	29.96	6.1	33	S W	16
Pleasure Ridge Park.....	.....	.....	.....	5.4	26	N W	16
Shelbyville.....	.....	.....	.....	.....	.....	.....	.....

NOTE—Correction for rainfall report at Union City, Tenn., received too late to appear in rainfall table. Trace occurred there on the 25th. Correction for rainfall on the 16th at Caddo also received too late.

Climatological Data for September, 1897.

Stations,	Counties,	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.			Prevailing direction of wind.	Observers.
				Mean.	Departure from the normal.	Highest. Date.	Lowest. Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snow fall (unmeasured).	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.				
WESTERN SECTION.																				
Blaudville	Ballard	445	5	73.5		96	11	40	21	40	0.08		0.08		1	25	4	I	N E	
Bowling Green (a)	Warren	469	9	75.1	+4.0	97	16	44	22	37	0.08	-2.74	0.08		1	28	2	0	S	
Bowling Green (b)*	Warren	469	5	70.1		96	16	35	22	37	0.10		0.10		1	27	3	0	S E	
Cairo	Alexander, Ill.	350	26	75.8	+5.8	96	11	46	21	31	0.53	-2.03	0.28		3	24	4	2	S S	
Canton *	Trigg	8	74.2	+5.1	100	12	42	22	37	†	-2.58	†		0	29	1	0	S W		
Clarksville	Montgomery, Tenn.	481	16	74.6		97	16	40	22	39	†		†		0	28	2	0	S E	
Erlington	Hopkins	370	8	73.2	+2.5	93	14	39	21	36	†	-3.30			0	19	II	0		
Eusor	Daviess	1		73.5		98	16	39	22	37	0.08		0.08		1	12	I	N W		
Fords Ferry	Crittenden	5				100	15	39	22	37	†		†		0					
Franklin	Simpson	691	9																	
Henderson	Henderson	382	5	74.7		98	16	42	20	36	0.08		0.08		1	29	I	0		
Hopkinsville	Christian	524	2	75.0		98	16	41	22	38	†		†		0	25	5	0	S E	
Owensboro	Daviess	479	2	72.7		97	15	38	22	39	0.26		0.26		1	28	I	I	S	
Paducah	McCracken	341	5	77.4		102	11	44	22	43	0		0		0	27	3	0	E	
Pilot Oak	Graves	411	3																T. G. Lowry.	
Princeton	Caldwell	455	8	74.5	+4.9	100	12	36	22	46	†	-3.00	†		0	26	4	0		
Russellville	Logan	534	6	75.9	+4.0	103	15	36	22	49	†	-3.61	†		0	25	5	0	S W	
Union City	Obion, Tenn.	346	2			98	10								0	27	I	2	W. P. Noah.	
CENTRAL SECTION.																				
Alpha	Clinton	637	5												0	28	2	0		
Bardstown	Nelson	637	2	72.9		100	16	35	22	43	0.58		0.58		1	29	I	0		
Burnside	Pulaski	773	2	70.5											1					
Byrdstown	Pickett, Tenn.	1020	2												1					
Caddo	Pendleton	8													4	22	8	0	N W	
Carrollton	Carroll	472	6	71.0	+1.2	99	15	39	20	41	0.18	-2.79	0.18		1					
Cincinnati, Ohio	Hamilton, Ohio	540	26	71.4	+3.2	97	15	42	21	35	0.64	-1.73	0.49		4	25	5	0	S E	
Edmonton	Metcalfe	8		70.0	+1.3	93	16	36	22	42	†	-3.11	†		0	23	6	I	N	
Hubbank	Pulaski	1177	5	68.8		96	16	33	22	43	†	†	†		0	28	2	0	C. D. Lewis.	
Falmouth	Pendleton	530	5												2				J. V. Oldham.	
Frankfort	Franklin	560	9	68.2	+0.5	97	15	37	20	46	0.33	-2.83	0.18		2	30	0	0	S	
Georgetown	Scott	874	4	70.4		96	16	36	21	33	†				B. T. Farmer.					
Greensburg	Greene	581	6	73.4	+4.2	104	15	32	21	52	†	-2.60	†		0	20	0	I		
Irvington	Breckinridge	1		72.6		96	16	38	21	42	0.05		0.05		1	26	4	0	S	
Leitchfield	Grayson	635	3	70.9		99	16	34	22	42	†		†		0	27	3	0	S E	
Lexington	Fayette	946	14	72.4	+4.4	96	14	40	21	32	0.80	-1.80	0.42		3	25	4	I	E	
Loretto	Marion	1		71.4		99	16	31	21	48	0.01		0.01		1	14	15	I		
Louisville	Jefferson	525	26	74.5	+5.2	100	14	42	21	35	0.75	-2.07	0.75		2	24	4	2	N	
Lyndon	Jefferson	581	1	70.6		95	16	35	21	40	0.10		0.10		1	30	0	0	W	
Marrowbone	Cumberland	7		70.4		97	16	32	22	49	†		†		0	21	9	0	W	
Mount Herman	Monroe			73.8											R. S. Plumlee, M. D.					
Owen	Owen	2		74.0		97	15	42	21	32	0.18		0.09		0	22	8	0	S	
Pleasure Ridge Park	Jefferson	447	5	70.9		100	14	31	21	48	0.20		0.18		2	27	3	0		
Richmond	Madison	926	8	72.6	+2.9	100	11	38	21	42	0.53	-2.38	0.28		3	20	10	0	N E	
Saint John	Hardin	760	2	70.6		99	11	37	21	45	0.03		0.02		2	27	3	0	R. M. Parks.	
Scott	Kenton	1		71.8		100	15	41	21	41	1.20		0.65		5	23	6	I	N	
Shelby City *	Boyle	1		73.0		105	15	32	22	51	0		0		0	28	2	0		
Shelbyville	Shelby	695	9	72.5	+3.9	102	14	53	22	47	0.39	-2.54	0.39		2	25	5	0		
Williamsburg	Whitley	939	2	67.4		97	14	34	21	43	†		†		0	26	0	4	S E	
EASTERN SECTION.																				
Ashland	Boyd	530	2	60.0		97	16	37	21	44	0.60		0.60		1	28	2	0		
Carlisle	Nicholas	1		71.0		100	11	35	21	43	0.01		0.01		1	28	I	I	N E	
Cynthiamburg*	Boyd	544	6	65.7		92	16	45	22	50	0.77	-1.95	0.49		3	20	I	0	N	
Middlesboro	Bell	1000	7	67.9	-0.4	96	15	32	21	50	0.10	-1.73	0.07		3	20	0	I	N W	
Mount Sterling	Montgomery	930	9	69.5	+3.0	96	15	35	22	58	0.15	-2.60	0.19		2	29	0	I	N E	
Sandyhook	Elliott	1280	2																	
Sargent	Letcher	981	1	65.0	-0.7	95	16	37	22	43	0.45	0.49	0.49		1	25	5	0		
Southfork *	Owsley	981	2	67.0											1	29	I	0		
Vanceburg	Lewis																			
Means for State				72.8	+3.4						0.21	-2.73			1	26	4	0	S E	

NOTE.—Figures at stations indicate number of days missing from month's report. † Trace. * Not from standard gauge.

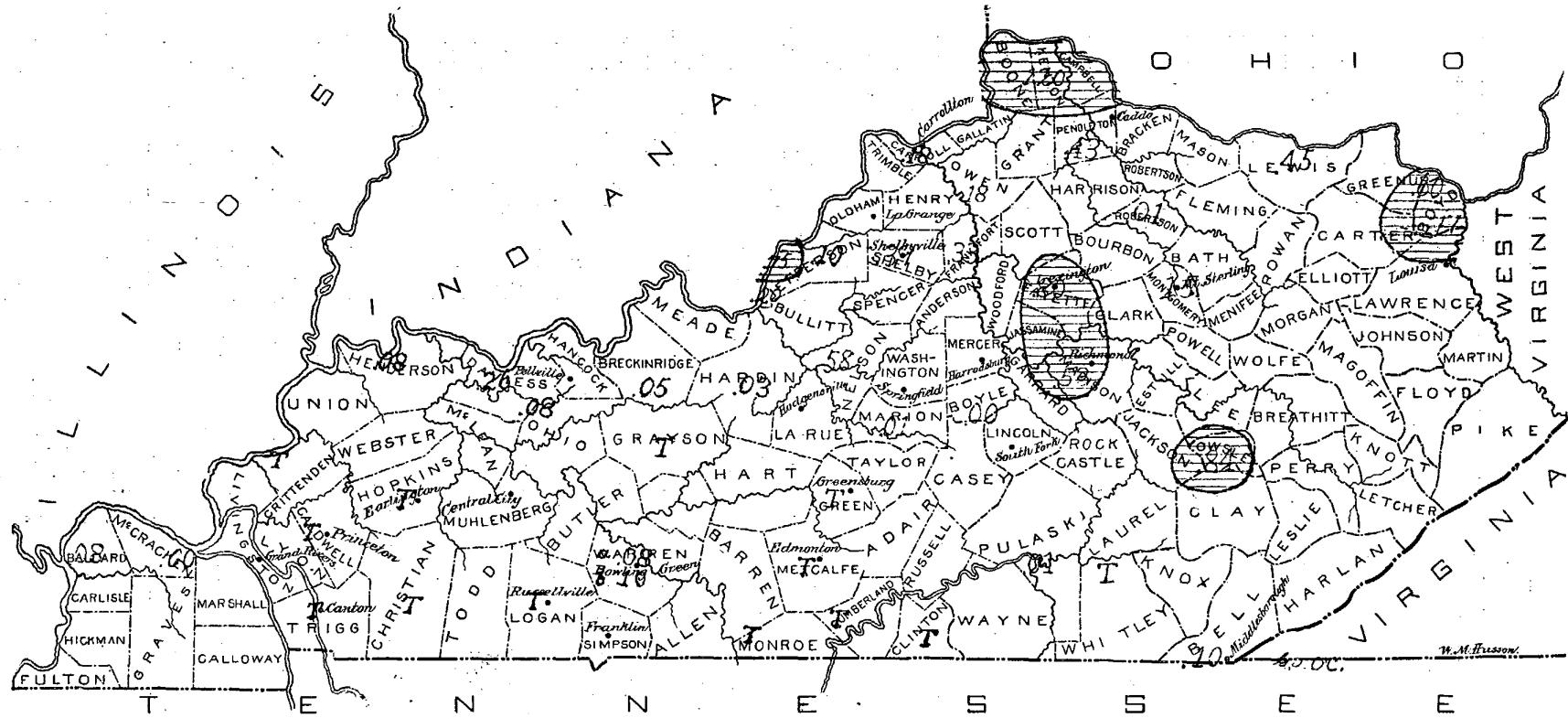
* Means obtained from $7+2+9+9$ (6 o'clock observations) -4, and extremes from observed readings. ‡ Mean from $8+8+2$.

CLIMATE AND CROPS: KENLUCK SECTION

SEPTEMBER, 1896.

Daily Maxima and Minima Temperatures, September, 1897.

TOTAL PRECIPITATION, SEPTEMBER, 1897.



Shaded areas show localities where rainfall exceeded half an inch. Respective amounts are entered at stations. T.—Trace.

Daily Precipitation, September, 1897.

Stations.	Day of month.																													Total.			
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.			
WESTERN SECTION.																																	
Blandville.....																																	0.08
Bowling Green (a).....																																	0.08
Bowling Green (b).....																																	0.10
Cairo, Ill.....																																	0.53
Canton.....																																	*
Clarksville, Tenn.....	†																																†
Earlington.....	†																																0.08
Ensor.....	†																																0.08
Fords Ferry.....	†																																0.08
Franklin.....	†																																0.08
Henderson.....																																	0.08
Hopkinsville.....																																	†
Owensboro.....																																	0.26
Paducah.....																																	0
Pilot Oak.....																																	0
Princeton.....																																	†
Russellville.....																																	0
Union City, Tenn.....																																	0
CENTRAL SECTION.																																	
Alpha.....	†																																†
Bardstown.....																																	0.58
Burnside.....																																	0.01
Byrdstown, Tenn.....	.03																																0.66
Caddo.....																																	
Carrollton.....	.18	†																															0.18
Cincinnati, Ohio.....	.05	.07																															0.64
Edmonton.....		†																															†
Eubank.....		.37																															0.43
Frankfort.....	.18																																0.33
Greensburg.....																																	0.05
Irvington.....																																	†
Leitchfield.....																																	0.80
Lexington.....		.42																															
Loretto.....																																	0.01
Lonisville.....																																	0.75
Lyndon.....																																	0.10
Marrowbone.....																																	†
Mount Herman.....																																	†
Owenton.....		.09	.18																														0.18
Pleasure Ridge Park.....			.18																													0.20	
Richmond.....			.28																													0.53	
Saint John.....				.01																												0.03	
Scott.....			.53																													1.20	
Shelby City.....																																	0
Shelbyville.....		†																															0.39
Williamsburg.....																																	†
Average for State.....																																	0.21

* Amount which fell on this day is included in next measurement. † A sprinkle of rainfall in amount less than .01 inch. § Not from standard gauge.